

Art Unit: 2836

This listing of claims will replace all prior versions, and listings, of which in the applications:

Listing of Claims:

1-4. (Canceled)

5. (Amended) A method of generating a pulse signal ~~according to claim 4, comprising the steps of:~~
~~_____ providing a pair of magnets in parallel to each other such that their opposite poles are faced to each other;~~
~~_____ providing a magnetic element between said magnets;~~
~~_____ placing an object at a first position which is opposed to one of said opposite poles to apply a negative-direction magnetic field said magnetic element;~~
~~_____ advancing said object to a second position which is opposed to the other of said opposite poles to apply a positive-direction magnetic field to said magnetic element, thus changing a direction and amount of said magnetic field applied to said magnetic element, which causes a large Barkhausen jump in said magnetic element; and~~
~~_____ generating a pulse signal in response to said large Barkhausen jump, wherein said opposite poles of said magnets have a variable distance.~~

6. (Amended) A method of generating a pulse signal ~~according to claim 4, comprising the steps of:~~
~~_____ providing a pair of magnets in parallel to each other such that their opposite poles are faced to each other;~~
~~_____ providing a magnetic element between said magnets;~~

Art Unit: 2836

_____ placing an object at a first position which is opposed to one of said opposite poles to apply a negative-direction magnetic field said magnetic element;

_____ advancing said object to a second position which is opposed to the other of said opposite poles to apply a positive-direction magnetic field to said magnetic element, thus changing a direction and amount of said magnetic field applied to said magnetic element, which causes a large Barkhausen jump in said magnetic element; and generating a pulse signal in response to said large Barkhausen jump, wherein said magnets have a width greater than that of said object

7. (Amended) A method of generating a pulse signal ~~according to claim 4,~~ comprising the steps of:

_____ providing a pair of magnets in parallel to each other such that their opposite poles are faced to each other;

_____ providing a magnetic element between said magnets;

_____ placing an object at a first position which is opposed to one of said opposite poles to apply a negative-direction magnetic field said magnetic element;

_____ advancing said object to a second position which is opposed to the other of said opposite poles to apply a positive-direction magnetic field to said magnetic element, thus changing a direction and amount of said magnetic field applied to said magnetic element, which causes a large Barkhausen jump in said magnetic element; and generating a pulse signal in response to said large Barkhausen jump, wherein said magnetic element extends from

Art Unit: 2836

said one end of said magnets to a predetermined distance from the other end of said magnets.

8. (Original) A method of generating a pulse signal according to claim 7, wherein said predetermined distance is no more than one half of said magnets.

9. (Amended) A method of generating a pulse signal ~~according to claim 4, comprising the steps of:~~
providing a pair of magnets in parallel to each other such that their opposite poles are faced to each other;
providing a magnetic element between said magnets;
placing an object at a first position which is opposed to one of said opposite poles to apply a negative-direction magnetic field said magnetic element;
advancing said object to a second position which is opposed to the other of said opposite poles to apply a positive-direction magnetic field to said magnetic element, thus changing a direction and amount of said magnetic field applied to said magnetic element, which causes a large Barkhausen jump in said magnetic element; and
generating a pulse signal in response to said large Barkhausen jump, wherein said magnetic element extends at a predetermined angle with a longitudinal direction of said magnets.

10-11. (Canceled)

12. (Amended) A pulse signal generator ~~according to claim 11~~ comprising:
a magnetic element able to cause a large Barkhausen jump;

_____ detection means for detecting a magnetic changes
in said magnetic element to generate a pulse signal; and
_____ a pair of magnetic field sources consisting of
parallel magnets and magnetic circuit forming members and
provided in parallel to each other on opposite sides of
said magnetic element such that their opposite poles are
faced to each other so that when an object advances from
one of said opposite poles to the other, a magnetic field
applied to said magnetic element changes to cause a large
Barkhausen jump in said magnetic element, thus causing said
detection means to generate a pulse signal, which further
comprises an auxiliary magnetic circuit forming member
provided between said magnetic circuit forming members for
connecting said magnetic circuit forming members at other
ends which are opposite to said one ends.

13. (Original) A pulse signal generator according to claims 12, wherein said auxiliary magnetic circuit forming member is connected to said magnetic circuit forming members at varying points.

14. (Original) A pulse signal generator according to claims 12, wherein said magnetic element is spaced at an end thereof from said auxiliary magnetic circuit forming member by a predetermined distance.

15. (Canceled)

16. (Amended) A pulse signal generator ~~according to claim 15 comprising:~~

a magnetic element able to cause a large
Barkhausen jump;

_____ detection means for detecting a magnetic changes
in said magnetic element to generate a pulse signal; and

a pair of magnetic field sources consisting of only magnets and provided in parallel to each other on opposite sides of said magnetic element such that their opposite poles are faced to each other so that when an object advances from one of said opposite poles to the other, a magnetic field applied to said magnetic element changes to cause a large Barkhausen jump in said magnetic element, thus causing said detection means to generate a pulse signal, wherein said opposite poles of said magnets have a variable distance.

17. (Amended) A pulse signal generator ~~according to claim 15~~ comprising:

a magnetic element able to cause a large Barkhausen jump;

detection means for detecting a magnetic changes in said magnetic element to generate a pulse signal; and

a pair of magnetic field sources consisting of only magnets and provided in parallel to each other on opposite sides of said magnetic element such that their opposite poles are faced to each other so that when an object advances from one of said opposite poles to the other, a magnetic field applied to said magnetic element changes to cause a large Barkhausen jump in said magnetic element, thus causing said detection means to generate a pulse signal, wherein said magnets have a width greater than that of said object.

18. (Amended) A pulse signal generator ~~according to claim 15~~ comprising:

a magnetic element able to cause a large Barkhausen jump;

detection means for detecting a magnetic changes
in said magnetic element to generate a pulse signal; and
a pair of magnetic field sources consisting of
only magnets and provided in parallel to each other on
opposite sides of said magnetic element such that their
opposite poles are faced to each other so that when an
object advances from one of said opposite poles to the
other, a magnetic field applied to said magnetic element
changes to cause a large Barkhausen jump in said magnetic
element, thus causing said detection means to generate a
pulse signal, wherein said magnetic element extends from
said one end of said magnets to a predetermined distance
from the other end of said magnets.

19. (Original) A pulse signal generator
according to claim 18, wherein said predetermined distance
is no more than one half of said magnets.

20. (Amended) A pulse signal generator ~~according~~
~~to claim 15, comprising:~~

a magnetic element able to cause a large
Barkhausen jump:

detection means for detecting a magnetic changes
in said magnetic element to generate a pulse signal; and
a pair of magnetic field sources consisting of
only magnets and provided in parallel to each other on
opposite sides of said magnetic element such that their
opposite poles are faced to each other so that when an
object advances from one of said opposite poles to the
other, a magnetic field applied to said magnetic element
changes to cause a large Barkhausen jump in said magnetic
element, thus causing said detection means to generate a
pulse signal, wherein said magnetic element extends at a

Application Number: 09/995,758

page 8

Art Unit: 2836

predetermined angle with a longitudinal direction of said magnets.